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EXAMINER	
CHEN, JUNPENG	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/531,501	CATHELIN, PHILIPPE	
	Examiner	Art Unit	
	JUNPENG CHEN	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 July 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 25-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 25-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to applicant's arguments filed on 07/10 /2008. Claims 1-8 and 25-31 have been amended. Claims 9-24 have been cancelled. Currently, claims 1-8 and 25-31 are pending. **This action is made FINAL**.

Response to Arguments

2. Applicant's arguments filed 07/1/2008 have been fully considered but they are not persuasive.

Regarding amended claims 1 and 25, Applicant argues that Kasperovitz teaches a heterodyne structure with a high intermediate frequency on page 8. The Examiner respectfully disagrees. According to col. 6, lines 37-43, Kasperovitz clearly discloses that the receiver is of the direct-conversion type, while the TV broadcasting takes place in frequency range between 950 MHz – 2150 MHz, the tuning oscillator LO is tuned throughout the frequency range between 950 MHz and 2150 MHz. Therefore, the intermediate frequency of Kasperovitz will either be zero-IF or low-IF (null or quasi-null).

Regarding Applicant's argument on limitation b) as in pages 9 and 10 and request a revised mathematical proof based on Kasperovitz specification. Applicant's request is granted. According to Fig. 6, col. 6 with lines 36-65, Kasperovitz discloses that signal Ssf is ranging from 237 MHz and 307 MHz. While TV broadcast signal ranging from 950 MHz to 2150 MHz is with a channel spacing of approximately 29.16 MHz and a channel bandwidth of approximately 26.4 MHz, Kasperovitz discloses the that the frequency of Ssf is greater 10 times the frequency spacing of the frequency

channels reduced to the output frequency of the LO. Specifically, 307 MHz > 10 * 29.16 MHz.

Regarding Applicant's argument that PAAA discloses a single loop-type PLL circuit with cut-off frequency being less than tenth of the reference frequency of the loop and does not discloses such feature in a dual phase locked loops system. Applicant is reminded that, according to KSR (see MPEP 2141 and 2143), an invention is unpatentable if it falls into anyone of the following: 1) combining prior art elements according to known methods to yield predictable results; 2) use of known technique to improve similar devices (methods, or products) in the same way; 3) applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; and 4) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. For example, while PAAA discloses a known technique of setting the cut-off frequency of a PLL of a device to be less than tenth of the reference frequency of the loop to stabilize the PLL, Kasperovitz discloses a known (similar) device with PLLs. By applying the known technique of PAAA to a known (similar) device of Kasperovitz, improvement to yield predictable results would be obtained (stabilizing the loops). Therefore, the claims in questions are not patentable based on the KSR rulings, consequently, the rejection are maintained.

Claim Objections

3. **Claims 1 and 31** are objected to because of the following informalities:

a) On **lines 4** of **claim 1**, insert –radio frequency-- before "device";

b) On **lines 6** of **claim 1**, replace –local main-- to "main local";

c) On **lines 1** of **claim 31**, replace –9-- to "25";

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 25-28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kasperovitz** et al. (U.S. Patent 6,665,523 B1) in view of prior art admission by Applicant (**PAAA**).

Consider **claim 25**, Kasperovitz discloses A radio frequency device having a null or quasi-null intermediate frequency, intended to receive or transmit a radio frequency signal having a frequency that is part of a frequency range subdivided into frequency channels (read as the receiver, Figures 5, col. 5 with line 22 to col. 6 with line 65), comprising:

a frequency transposition mixer (read as MIX, Figure 5);

a local main oscillator connected to the mixer (read as CCO connects to MIX, Figure 5), the mixer frequency transposing the radio frequency signal in response to an output of the local main oscillator to the null or quasi-null intermediate frequency (read as the receiver is of the direct-conversion type, while the TV broadcasting takes place in frequency range between 950 MHz – 2150 MHz, the tuning oscillator LO is tuned throughout the frequency range between 950 MHz and 2150 MHz, that is, the intermediate frequency will either be zero-IF or low-IF);

a main phase locked loop incorporating the main oscillator (VCOP) receiving a first reference frequency (read as the LOOP in Figure 5);

a voltage-controlled auxiliary oscillator (VCOA) supplying the first reference frequency (read as signal Ssf and VCO, Figure 5); and

an auxiliary phase locked loop incorporating the voltage controlled auxiliary oscillator receiving a second reference frequency (read as the PLL comprising VCO, N_{tune}, PFD2 and LPF2, having reference signal Fref, Figure 5);

wherein the second reference frequency is less than the first reference frequency (read as, i.e. if Nband is 4, Fref has frequency of 250kHz, is less than the frequency of Ssf, which is between 237.5 MHz – 307 MHz, col. 6 with lines 36-65); and

wherein the first reference frequency is less than an output frequency of the local main oscillator (read as, i.e. 307 MHz < 950 MHz), is greater than ten times a spacing of the frequency channels reduced to the output frequency of the local main oscillator (read as 307 MHz > 10 * 29.16 MHz), and is removed from a frequency which is a whole integer multiple of the frequency for the radio frequency signal (read as 307 MHz is far from 950 MHz or multiples thereof).

However, Kasperovitz does not specifically disclose wherein a spacing between the first reference frequency of the main phase locked loop and a whole integer multiple of the transmit or receive frequency is at least the cut-off frequency of the main phase locked loop.

Nonetheless, in related art, PAAA discloses that for reasons of stability, the cut-off frequency is less than a tenth of the reference frequency of the loop, paragraph [17] of the current specification on page 5.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of PAAA into the teachings of Kasperovitz for the purpose of obtaining stability of the loops (i.e. cut-off frequency = 307 MHz / 10 = 30.7 MHz, which is less than 643 MHz (950 MHz - 307 MHz)).

Consider **claim 26, as applied to claim 25 above**, Kasperovitz, as modified by PAAA, discloses wherein the auxiliary phase locked loop comprises a whole divider and in that the second reference frequency of the auxiliary phase locked loop is less than or equal to the spacing of the frequency channels if the radio frequency signal for such spacing were reduced to the first reference frequency (read as Fref, Ssf and the output of CCO, Figure 5).

Consider **claim 27, as applied to claim 25 above**, Kasperovitz, as modified by PAAA, discloses wherein the first reference frequency of the main phase locked loop is greater than a twentieth of the output frequency of the local main oscillator (read as, i.e. 307 MHz > 950Mhz/20, Figure 5, col. 6 with lines 36-65).

Consider **claim 28, as applied to claim 25 above**, Kasperovitz, as modified by PAAA, discloses wherein the claimed invention above and wherein the range of frequencies to which the send or receive frequency belongs is in the vicinity of 900 MHz or 1800 MHz (corresponding to the GSM or DCS standard) (operating frequency range is between 950 MHz and 2150 MHz, col. 6 with lines 36-65), but does not specifically disclose the first reference frequency is about 450 MHz, and the second reference frequency is about 50 kHz.

However, Kasperovitz discloses and shows several different examples by selecting different division factors of Nband and Ntune, Table in col. 6.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to select different division factors of Nband and Ntune,

to obtain a similar same result as claimed, as it is just a matter of design choice to select different division factors of Nband and Ntune.

Consider **claim 31, as applied to claim 25**, Kasperovitz, as modified by PAAA, discloses wherein the second reference signal has a frequency which is an integer multiple of a cut-off frequency of the auxiliary phase locked loop (read as selecting a cut-off frequency of the auxiliary phase locked loop that making the reference frequency be integer multiple of the cut-off frequency is only a matter of design choice as the specification does not specify the advantage of such feature).

Claims 1-8, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kasperovitz** et al. (U.S. Patent 6,665,523 B1) in view of prior art admission by Applicant (**PAAA**), and in further view of **Vaucher** C et al: "A wide-band tuning system for fully integrated satellite receivers" IEEE Inc. New York, US, Vol. 33, no. 7, 07-1998, pages 987-997.

Consider **claim 1**, Kasperovitz discloses a radio frequency device having a null or quasi-null intermediate frequency, intended to receive or transmit a radio frequency signal wherein the transmit or receive frequency is part of a frequency range subdivided into frequency channels (read as the receiver, Figures 5, col. 5 with line 22 to col. 6 with line 65), wherein the device comprises, frequency transposition means connected to a main local oscillator (read as CCO connects to MIX, Figure 5), the frequency transposition means using an output of the main local oscillator to transpose the received radio frequency signal to the null or quasi-null intermediate frequency (read as

the receiver is of the direct-conversion type, while the TV broadcasting takes place in frequency range between 950 MHz – 2150 MHz, the tuning oscillator LO is tuned throughout the frequency range between 950 MHz and 2150 MHz, that is, the intermediate frequency will either be zero-IF or low-IF); and wherein the main local oscillator is incorporated inside a main phase locked loop (read as the LOOP in Figure 5) receiving a first reference frequency that is supplied by a voltage-controlled auxiliary oscillator (read as signal Ssf and VCO, Figure 5), itself incorporated into an auxiliary phase locked loop receiving a second reference frequency (read as the PLL comprising VCO, N_{tune}, PFD2 and LPF2, having reference signal Fref, Figure 5) that is less than the first reference frequency output from the voltage-controlled auxiliary oscillator (read as, i.e. if Nband is 4, Fref has frequency of 250kHz, is less than the frequency of Ssf, which is between 237.5 MHz – 307 MHz, col. 6 with lines 36-65), wherein the first reference frequency of the main phase locked loop is a) less than the output frequency of the main local oscillator (read as, i.e. 307 MHz < 950 MHz), b) greater than 10 times the frequency spacing of the frequency channels reduced to the output frequency of the main local oscillator (read as 307 MHz > 10 * 29.16 MHz), and c) removed from a frequency which is a whole integer multiple of the transmit or receive frequency (read as 307 MHz is far from 950 MHz or multiples thereof).

However, Kasperovitz does not specifically disclose wherein a spacing between the first reference frequency of the main phase locked loop and a whole integer multiple of the transmit or receive frequency is at least the cut-off frequency of the main phase locked loop.

Nonetheless, in related art, PAAA discloses that for reasons of stability, the cut-off frequency is less than a tenth of the reference frequency of the loop, paragraph [17] of the current specification on page 5.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of PAAA into the teachings of Kasperovitz for the purpose of obtaining stability of the loops (i.e. cut-off frequency = 307 MHz / 10 = 30.7 MHz, which is less than 647 MHz (950 MHz - 307 MHz)).

However, Kasperovitz, as modified by PAAA, still does not specifically discloses that the MIX and the LOOP is on the same electronic chip.

Nonetheless, in related art, Vaucher discloses a similar receiver, for cellular and cordless communication, that is fully integratable, comprising similar Mixers and Loop1 and Loop2, Figure 3, pages 987-989.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Vaucher into the teachings of Kasperovitz, which modified by PAAA, for the purpose of reducing the receiver size of a cellular device.

Consider **claim 2, as applied to claim 1 above**, Kasperovitz, as modified by PAAA and Vaucher, discloses wherein the auxiliary phase locked loop comprises a whole divider and in that the reference frequency of the auxiliary phase locked loop is less than or equal to the frequency spacing of the frequency channels if the transmit or receive frequency for such frequency spacing were reduced to the first reference

frequency of the main phase locked loop (read as, i.e. Fref=250kHz, is equals to 1MHz/Nband= 1MHz/4 = 250kHz, col. 6 with lines 36-65).

Consider **claim 3, as applied to claim 1 above**, Kasperovitz, as modified by PAAA and Vaucher, discloses wherein the first reference frequency of the main phase locked loop is greater than a twentieth of the output frequency of the main local oscillator (read as, i.e. 307 MHz > 47.5 MHz, the result of 950MHz/20, col. 6 with lines 36-65).

Consider **claim 4, as applied to claim 1 above**, Kasperovitz, as modified by PAAA and Vaucher, discloses wherein the claimed invention above and wherein the range of frequencies to which the send or receive frequency belongs is in the vicinity of 900 MHz or 1800 MHz (corresponding to the GSM or DCS standard) (operating frequency range is between 950 MHz and 2150 MHz, col. 6 with lines 36-65), but does not specifically disclose the first reference frequency of the main phase locked loop being equal to 450 MHz, whereas the second reference frequency of the auxiliary phase locked loop is equal to 50 kHz.

However, Kasperovitz discloses and shows several different examples by selecting different division factors of Nband and Ntune, Table in col. 6.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to select different division factors of Nband and Ntune, to obtain a similar same result as claimed, as it is just a matter of design choice to select different division factors of Nband and Ntune.

Consider **claim 5, as applied to claim 1 above**, Kasperovitz, as modified by PAAA and Vaucher, discloses wherein the electronic chip also comprises the two phase locked loops (read as the receiver components of Figure 5 is fully integrated into the same chip to reduce size of the receiver).

Consider **claim 6, as applied to claim 5 above**, Kasperovitz, as modified by PAAA and Vaucher, discloses wherein the radio frequency device is integrally produced on said electronic chip (read as the receiver components of Figure 5 is fully integrated into the same chip to reduce size of the receiver).

Consider **claims 7 and 8, as applied to claim 1 above**, Kasperovitz, as modified by PAAA and Vaucher, discloses a wireless communication system incorporates the radio frequency device as claimed in claim 1 as in claim 7 and wherein the component forms a cellular mobile telephone (read as the receiver circuit is for cellular and cordless communication, Vaucher).

Consider **claims 29 and 30, as applied to claim 25 above**, Kasperovitz, as modified by PAAA, discloses the claimed invention above but does not specifically disclose wherein the device is fabricated as an integrated circuit chip as in claim 29 and wherein the radio frequency device is integrally produced on said electronic chip as in claim 30 .

Nonetheless, in related art, Vaucher discloses a similar receiver, for cellular and cordless communication, that is fully integratable, comprising similar Mixers and Loop1 and Loop2, Figure 3, pages 987-989.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Vaucher into the teachings of Kasperovitz, which modified by PAAA, for the purpose of reducing the receiver size of a cellular device.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Junpeng Chen whose telephone number is (571) 270-1112. The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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